Having thus described several embodiments of the invention, the invention is now claimed to be

1. A method for performing black trapping on image data from a raster image processing frame buffer, wherein the image data includes pixel data according to a predetermined color space and black rendering hints, the method comprising the steps of:

a) receiving the pixel data and the black rendering hints from the frame buffer,

b) converting the pixel data from the frame buffer to device color space (e g C,M,Y,K) data,

c) retrieving the C,M,Y,K data and an associated black rendering hint for a first pixel;

d) determining if the black rendering hint for the first pixel is true,

e) if the black rendering hint is true, performing a black trapping algorithm using a plurality of pixels forming a context window associated with the first pixel and subsequently rendering the first pixel according to an under print system, otherwise, subsequently rendering the first pixel according to a default rendering system;

f) determining if additional pixel data from the frame buffer is to be processed in accordance with steps c) through e); and,

g) if additional pixel data is to be processed, repeating steps c) through e) for a next pixel, otherwise, ending the process

2 The method as set forth in claim 1, wherein the predetermined color space for pixel data from the raster image processing frame buffer does not include a black channel.

3. The method as set forth in claim 1, wherein the predetermined color space for pixel data from the raster image processing frame buffer is an RGB color space

4 The method as set forth in claim 1, if the black rendering hint is true, step e) further comprising

h) identifying a context window comprised of a predetermined number of pixels (N) surrounding the first pixel and setting a pixel counter equal to N,

i) setting a nonblack counter equal to zero;

j) setting C_S, M_S, and Y_S color summation values equal to zero,

k) retrieving the C,M,Y data and an associated black rendering hint for a first context pixel of the context window;

l) determining if the black rendering hint for the first context pixel is true,

m) if the black rendering hint is true, reducing the pixel counter by one, otherwise, i) incrementing the nonblack counter by one, ii) adding the C,M,Y values for the first context pixel to the current values of C_S, M_S, and Y_S, and iii) reducing the pixel counter by one;

n) determining if the pixel counter is zero;

o) if the pixel counter is zero, continuing on to the next step, otherwise, repeating steps k) through m) for a next context pixel of the context window,

p) determining if the nonblack counter is zero, and,

q) if the nonblack counter is zero, setting K for the first pixel equal to 255, otherwise, i) dividing the current values of C_S, M_S, and Y_S by the current value of the nonblack counter, ii) setting C,M,Y for the first pixel equal to the result from i), and iii) setting K for the first pixel equal to 255.

5 The method as set forth in claim 1, if the black rendering hint is true, step e) further comprising

h) identifying a context window comprised of a predetermined number of pixels (N) surrounding the first pixel and setting a pixel counter equal to N,

i) setting a nonblack counter equal to zero;

j) setting C_S, M_S, and Y_S color summation values equal to zero,

k) retrieving the C,M,Y data and an associated black rendering hint for a first context pixel of the context window;

l) determining if the black rendering hint for the first context pixel is true,

m) if the black rendering hint is true, reducing the pixel counter by one, otherwise, i) incrementing the nonblack counter by one, ii) adding the C,M,Y values for the first context pixel to the current values of C_S, M_S, and Y_S, and iii) reducing the pixel counter by one,

n) determining if the pixel counter is zero,

o) if the pixel counter is zero, continuing on to the next step, otherwise, repeating steps k) through m) for a next context pixel of the context window,

p) determining if the nonblack counter is zero; and,

q) if the nonblack counter is zero, i) setting C,M,Y for the first pixel equal to a predetermined C,M,Y value and ii) setting K for the first pixel equal to 255, otherwise, i) dividing the current values of C_S, M_S, and Y_S by the current value of the nonblack counter, ii) setting C,M,Y for the first pixel equal to the result from i), and iii) setting K for the first pixel equal to 255.

6. The method as set forth in claim 1, if the black rendering hint is true, step e) further comprising:

h) identifying a context window comprised of a predetermined number of pixels (N) surrounding the first pixel and setting a pixel counter equal to N,

i) setting a nonblack counter equal to zero,

j) setting C_S, M_S, and Y_S color summation values equal to zero,

k) retrieving the C,M,Y data and an associated black rendering hint for a first context pixel of the context window;

l) determining if the black rendering hint for the first context pixel is true,

m) if the black rendering hint is true, reducing the pixel counter by one, otherwise, i) incrementing the nonblack counter by one, ii) adding the C,M,Y values for the first context pixel to the current values of C_S, M_S, and Y_S, and iii) reducing the pixel counter by one;

n) determining if the pixel counter is zero;

o) if the pixel counter is zero, continuing on to the next step, otherwise, repeating steps k) through m) for a next context pixel of the context window,

p) determining if the nonblack counter is zero; and,

q) if the nonblack counter is zero, i) setting C,M,Y for the first pixel equal to a previously saved C,M,Y value and ii) setting K for the first pixel equal to 255, otherwise, i) dividing the current values of C_S, M_S, and Y_S by the current value of the nonblack counter, ii) setting C,M,Y for the first pixel equal to the result from i) and saving the C,M,Y value, and iii) setting K for the first pixel equal to 255

7. A method for performing black trapping on image data from a raster image processing frame buffer, wherein the image data includes pixel data according to a predetermined color space, the method comprising the steps of:

a) receiving the pixel data from the frame buffer,

b) converting the pixel data from the frame buffer to C,M,Y,K pixel data,

c) retrieving one or more components of pixel data from the group consisting of pixel data from the frame buffer and C,M,Y,K pixel data for a first pixel,

d) determining if the first pixel is black with respect to predetermined thresholds for one or more components of the pixel data retrieved;

e) if the first pixel is black, performing a black trapping algorithm using a plurality of pixels forming a context window associated with the first pixel and subsequently rendering the first pixel according to an under print system, otherwise, subsequently rendering the first pixel according to a default rendering system,

f) determining if additional pixel data from the frame buffer is to be processed in accordance with steps c) through e); and,

g) if additional pixel data is to be processed, repeating steps c) through e) for a next pixel, otherwise, ending the process

8 The method as set forth in claim 7, wherein the predetermined color space for pixel data from the raster image processing frame buffer does not include a black channel.

9. The method as set forth in claim 7, wherein the predetermined color space for pixel data from the raster image processing frame buffer is an RGB color space.

10 The method as set forth in claim 7, wherein the pixel data retrieved in step c) is in the format output from the raster image processing frame buffer, step d) further comprising determining if the first pixel is black with respect to predetermined thresholds for one or more components of the pixel data from the raster image processing frame buffer.

11. The method as set forth in claim 10, wherein the pixel data from the raster image processing frame buffer is represented in an RGB color space, step d) further comprising determining if the first pixel is black with respect to predetermined thresholds (T) for one or more expressions selected from the group consisting of i) $R = G = B = 0$, ii) $R + G + B < T_1$, and iii) $R < T_2$, $G < T_3$, $B < T_4$

12 The method as set forth in claim 7, step d) further comprising determining if the first pixel is black with respect to predetermined thresholds for one or more components of the pixel data in the C,M,Y,K color space

13 The method as set forth in claim 12, step d) further comprising determining if the first pixel is black with respect to predetermined thresholds (T) for one or more expressions selected from the group consisting of i) $K > T_1$, ii) $C + M + Y > T_2$, and iii) $C > T_3$, $M > T_4$, $Y > T_5$

14. The method as set forth in claim 7, if the first pixel is black, step e) further comprising.

h) identifying a context window comprised of a predetermined number of pixels (N) surrounding the first pixel and setting a pixel counter equal to N,

i) setting a nonblack counter equal to zero,

j) setting C_S, M_S, and Y_S color summation values equal to zero,

k) retrieving one or more components of pixel data from the group consisting of pixel data from the frame buffer and C,M,Y,K pixel data for a first context pixel of the context window;

l) determining if the first context pixel is black with respect to predetermined thresholds for one or more components of the pixel data retrieved;

m) if the first content pixel is black, reducing the pixel counter by one, otherwise, i) incrementing the nonblack counter by one, ii) adding the C,M,Y values for the first context pixel to the current values of C_S, M_S, and Y_S and iii) reducing the pixel counter by one,

n) determining if the pixel counter is zero,

o) if the pixel counter is zero, continuing on to the next step, otherwise, repeating steps k) through m) for a next context pixel of the context window,

p) determining if the nonblack counter is zero; and,

q) if the nonblack counter is zero, setting K for the first pixel equal to 255, otherwise, i) dividing the current values of C_S, M_S, and Y_S by the current value of the nonblack counter, ii) setting C,M,Y for the first pixel equal to the result from i), and iii) setting K for the first pixel equal to 255

15 The method as set forth in claim 14, wherein the pixel data retrieved in step k) is in the format output from the raster image processing frame buffer, step l) further comprising determining if the first context pixel is black with respect to predetermined thresholds for one or more components of the pixel data from the raster image processing frame buffer

16. The method as set forth in claim 15, wherein the pixel data from the raster image processing frame buffer is represented in an RGB color space, step l) further comprising determining if the first context pixel is black with respect to predetermined thresholds (T) for one or more expressions selected from the group consisting of i) $R = G = B = 0$, ii) $R + G + B < T_1$, and iii) $R < T_2$, $G < T_3$, $B < T_4$

17 The method as set forth in claim 14, step l) further comprising determining if the first context pixel is black with respect to predetermined thresholds for one or more components of the pixel data in the C,M,Y,K color space

18. The method as set forth in claim 17, step d) further comprising determining if the first context pixel is black with respect to predetermined thresholds (T) for one or more expressions selected from the group consisting of i) $K > T_1$, ii) $C + M + Y > T_2$, and iii) $C > T_3$, $M > T_4$, $Y > T_5$.

19 The method as set forth in claim 7, if the first pixel is black, step e) further comprising.

h) identifying a context window comprised of a predetermined number of pixels (N) surrounding the first pixel and setting a pixel counter equal to N,

i) setting a nonblack counter equal to zero;

j) setting C_S, M_S, and Y_S color summation values equal to zero,

k) retrieving one or more components of pixel data from the group consisting of pixel data from the frame buffer and C,M,Y,K pixel data for a first context pixel of the context window;

l) determining if the first context pixel is black with respect to predetermined thresholds for one or more components of the pixel data retrieved,

m) if the first context pixel is black, reducing the pixel counter by one, otherwise, i) incrementing the nonblack counter by one, ii) adding the C,M,Y values for the first context pixel to the current values of C_S, M_S, and Y_S, and iii) reducing the pixel counter by one,

n) determining if the pixel counter is zero,

o) if the pixel counter is zero, continuing on to the next step, otherwise, repeating steps k) through m) for a next context pixel of the context window,

p) determining if the nonblack counter is zero, and,

q) if the nonblack counter is zero, i) setting C,M,Y for the first pixel equal to a predetermined C,M,Y value and ii) setting K for the first pixel equal to 255, otherwise, i) dividing the current values of C_S, M_S, and Y_S by the current value of the nonblack counter, ii) setting C,M,Y for the first pixel equal to the result from i), and iii) setting K for the first pixel equal to 255.

20 The method as set forth in claim 19, wherein the pixel data retrieved in step k) is in the format output from the raster image processing frame buffer, step l) further comprising determining if the first context pixel is black with respect to predetermined thresholds for one or more components of the pixel data from the raster image processing frame buffer.

21 The method as set forth in claim 20, wherein the pixel data from the raster image processing frame buffer is represented in an RGB color space, step l) further comprising determining if the first context pixel is black with respect to predetermined thresholds (T) for one or more expressions selected from the group consisting of i) $R = G = B = 0$, ii) $R + G + B < T_1$, and iii) $R < T_2$, $G < T_3$, $B < T_4$

22. The method as set forth in claim 19, step l) further comprising determining if the first context pixel is black with respect to predetermined thresholds for one or more components of the pixel data in the C,M,Y,K color space

23. The method as set forth in claim 22, step d) further comprising determining if the first context pixel is black with respect to predetermined thresholds (T) for one or more expressions selected from the group consisting of i) $K > T_1$, ii) $C + M + Y > T_2$, and iii) $C > T_3$, $M > T_4$, $Y > T_5$

24 The method as set forth in claim 7, if the first pixel is black, step e) further comprising.

h) identifying a context window comprised of a predetermined number of pixels (N) surrounding the first pixel and setting a pixel counter equal to N,

i) setting a nonblack counter equal to zero,

j) setting C_S, M_S, and Y_S color summation values equal to zero.

k) retrieving one or more components of pixel data from the group consisting of pixel data from the frame buffer and C,M,Y,K pixel data for a first context pixel of the context window,

l) determining if the first context pixel is black with respect to predetermined thresholds for one or more components of the pixel data retrieved,

m) if the black rendering hint is true, reducing the pixel counter by one, otherwise, i) incrementing the nonblack counter by one, ii) adding the C,M,Y values for the first context pixel to the current values of C_S, M_S, and Y_S, and iii) reducing the pixel counter by one,

n) determining if the pixel counter is zero,

o) if the pixel counter is zero, continuing on to the next step, otherwise, repeating steps k) through m) for a next context pixel of the context window,

p) determining if the nonblack counter is zero; and,

q) if the nonblack counter is zero, i) setting C,M,Y for the first pixel equal to a previously saved C,M,Y value and ii) setting K for the first pixel equal to 255, otherwise, i) dividing the current values of C_S, M_S, and Y_S by the current value of the nonblack counter, ii) setting C,M,Y for the first pixel equal to the result from i) and saving the C,M,Y value, and iii) setting K for the first pixel equal to 255

25 The method as set forth in claim 24, wherein the pixel data retrieved in step k) is in the format output from the raster image processing frame buffer, step l) further comprising determining if the first context pixel is black with respect to predetermined thresholds for one or more components of the pixel data from the raster image processing frame buffer

26 The method as set forth in claim 25, wherein the pixel data from the raster image processing frame buffer is represented in an RGB color space, step l) further comprising determining if the first context pixel is black with respect to predetermined thresholds (T) for one or more expressions selected from the group consisting of i) $R = G = B = 0$, ii) $R + G + B < T_1$, and iii) $R < T_2$, $G < T_3$, $B < T_4$

27 The method as set forth in claim 24, step l) further comprising determining if the first context pixel is black with respect to predetermined thresholds for one or more components of the pixel data in the C,M,Y,K color space

28 The method as set forth in claim 27, step d) further comprising determining if the first context pixel is black with respect to predetermined thresholds (T) for one or more expressions selected from the group consisting of i) $K > T_1$, ii) $C + M + Y > T_2$, and iii) $C > T_3$, $M > T_4$, $Y > T_5$.